DOCUMENT RESUME

ED 433 759 HE 032 309

AUTHOR Kehrhahn, Marijke T.; Sheckley, Barry G.; Travers, Nancy L.
TITLE Effectiveness and Efficiency in Graduate Education. AIR 1999 Annual Forum Paper.
PUB DATE 1999-06-00
NOTE 24p.; Paper presented at the Annual Forum of the Association for Institutional Research (39th, Seattle, WA, May 30-June 3, 1999).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Persistence; Adult Education; Doctoral Programs; *Efficiency; *Graduate Study; Higher Education; Part Time Students; *Program Effectiveness; Program Evaluation; Student Attitudes; *Time To Degree; Vocational Education
IDENTIFIERS *AIR Forum; *University of Connecticut

ABSTRACT

This case analysis describes a program to improve the efficiency with which students in the Adult and Vocational Education Ph.D. program at the University of Connecticut work towards and achieve the doctoral degree. Data gathered between 1985 to 1992 indicated students (who were mostly part-time) dropped out at a 50 percent rate and took 7 to 10 years to complete their dissertations. Analysis suggested the efficiency problem was related to fragmentation of the three phases of doctoral study coursework, research development, and research. Program innovations to maximize student "time on task" and decrease time to degree were implemented beginning with the 1993-94 academic year and included: (1) clarifying faculty expectations and correcting student expectations about the process, milestones, and time frame necessary; (2) integrating the coursework, research development, and dissertation research phases; and (3) improving and increasing the supports provided to students to maximize students' "time on task" and minimize their incurred costs. The innovations resulted in significant reductions in time to degree from a mean of 7.8 years for students accepted prior to 1993 to a mean of 5.2 years for students accepted after this date. The latter students also reported experiencing more emotional support, goal support and technical support. (Contains 15 references.) (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 433 759

Running Head: Effectiveness and Efficiency in Graduate Education

Effectiveness and Efficiency in Graduate Education:

A Case Analysis

Marijke T. Kehrhahn
Assistant Professor
University of Connecticut
Department of Educational Leadership
249 Glenbrook Rd. Box U-2093
Storrs, CT 06269-2093
(860) 486-0248

Barry G. Sheckley
Professor
University of Connecticut
Department of Educational Leadership
249 Glenbrook Rd. Box U-2093
Storrs, CT 06269-2093
(860) 486-2738

Nancy L. Travers
Graduate Assistant
University of Connecticut
Department of Educational Leadership
249 Glenbrook Rd. Box U-2093
Storrs, CT 06269-2093
(860) 486-0250

BEST COPY AVAILABLE

HE 032 309

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
D. Vura
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

AIR
for Management Research, Policy Analysis, and Planning

This paper was presented at the Thirty-Ninth Annual Forum of the Association for Institutional Research held in Seattle, Washington, May 30-June 3, 1999.
This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of AIR Forum Papers.

Dolores Vura
Editor
Air Forum Publications

Effectiveness and Efficiency in Graduate Education: A Case Analysis

Abstract

Adult part-time graduate students are routinely neglected in discussions about ways to improve higher education environments for adult learners. Estimates on completion of enrolled doctoral students fall as low as 50% and those who do complete their degrees wend their way through the latter stages of their doctoral programs inefficiently. Initial data indicated that unclear expectations about the demands of doctoral study, fragmentation of the three phases of doctoral study – coursework, research development, and research, and feelings of isolation and disengagement at later stages contributed to the efficiency problem. Specifically, students took from 4 to 6 years to write an approved research proposal and 7 to 10 years to complete their dissertations. This case analysis reports on program innovations that were implemented to maximize student "time on task" and decrease time to degree. The innovations resulted in significant reductions in time to degree. In addition, learners in the intervention group reported experiencing emotional support, goal support, and technical support to a greater extent than did the non-intervention learners. Recommendations for improving efficiency and effectiveness of doctoral programs for part-time adult students are offered.

Effectiveness and Efficiency in Graduate Education: A Case Analysis

While adult learners in undergraduate programs are benefiting from improved services, their counterparts in graduate education have been referred to as *the lost tribe* (Baldwin & Thelin, 1990) and the *forgotten majority* (Baird, 1990). Older graduate students are routinely neglected in discussions about ways to improve educational services for adult learners. With an increasing number of adult learners enrolling in graduate programs, educators must learn more about this group of older scholars so that programs designed to serve them can be improved (Brazziel, 1992).

Bowen and Rudenstein (1992) estimated that only 50% of the students enrolled in Ph.D. programs actually graduate. For older students who earn Ph.D. degrees, Brazziel (1992) noted that an average of 12.7 years elapses between the completion dates for the Baccalaureate degrees and the Ph.D. degrees. At the University of Connecticut, Foote (1989) found that students who enrolled in Ph.D. graduate programs within the School of Education, most of whom were 30 plus years of age, spent over 7 years from their dates of admission to the dates on which they completed their Ph.D. programs.

The Efficiency Problem

From 1985 to 1992, the faculty of the Adult and Vocational Education (A&VE) Ph.D. program gathered evaluative feedback from students through end-of-course assessments, program reviews, focus group discussions, and informal dialogues. From an analysis of this information, the faculty mapped out the route Ph.D. graduate students, who were mostly part-time learners taking 3--6 graduate credits a semester, followed to completion of their doctoral studies. Table 1 summarizes their pilgrimage.

Table 1: Overview of Situation for Working Part-time Adult Graduate Students in Adult and Vocational Education Ph.. D. Program (1985 -- 1992)

	Start of Program	Middle of Program	End of Program
TASK	• Complete 12 - 15 courses	• Have research proposal approved • Pass comprehensive exams	• Complete and defend dissertation research
STUDENT AFFECT	• Motivated • Confident • Occasional anxiety • Goal directed: complete courses	• Unsure: "How do I write a proposal?" • Overwhelmed • Looking for a forest amongst the trees • Frustrating periods of inactivity	• Isolated, alone • Sometimes stimulated, empowered • Sometimes directionless, defeated
SUPPORTS PROVIDED to help students	• Course structure • Specific assignments • Frequent feedback • In-class cohort groups	• Periodic or random meetings with advisor • Self-directed learning resources e.g., library	• Periodic or random meetings with advisor • Self-directed learning resources e.g., library
USUAL OUTCOMES	• Engaged in courses • Usually stimulated by assignments • Focused on course work • Sense of progress	• Proposal development • Frequent frustration with unstructured learning process	• Degree completion or drop-out • Wide range of emotional outcomes (e.g., satisfaction, frustration)
Time to completion	• 3 - 5 years	• 4 - 6 years	• 6- 9 years

At the start of their graduate programs (Table 1), students concentrated on their coursework. The structured framework for completing course requirements offered students consistent support and feedback from faculty and in-class cohort groups. They were motivated and completed assignments with vigor. In most cases, students spent 3 to 5 years in this first phase of the program. During these years, however, students received little encouragement or assistance from faculty to establish direct linkages between course content and eventual dissertation research topics.

As summarized in Table 1, learners shifted, during the middle phase of their programs, from structured coursework to more self-directed and independent learning activities. Some students successfully made the shift; many did not. During this mid-phase students had to synthesize and integrate material from their coursework into a research proposal. In many cases the learners did not have the skills, background, or support to accomplish this task. Many learners underestimated the amount of time and effort involved in the process of writing an acceptable proposal. They became discouraged when they did not achieve success quickly 5and frustrated with the difficulty of pulling theoretical and technical information learned in various courses into a structured proposal. In too many cases students did not complete this phase of the program until a long and frustrating 4 to 6 years (Mean = 5.3 years or 64 months; Range = 20-104 months) had passed since the date on their letter of acceptance.

Transition into the final phase of the program was emotionally taxing for students. Contact with professors, fellow students, and advisors diminished as students in this final stretch turned their attention from courses to dissertation research. Learners felt alone, isolated, and disengaged from their studies. Again learners were uncertain of the process, naive about the large amount of time and effort that was needed, and sporadic in their efforts to produce acceptable work. Despite their prior coursework, many students at this phase lacked or had forgotten specific skills in data collection, data analysis, and technical writing. In a number of cases completing and defending their dissertation research required most students to invest a cumulative total of 6-8 years (Mean = 7.8 years or 94 months; Range = 43-172 months).

The A&VE faculty were concerned with the time-to-proposal and time-to-degree figures that were revealed in the study of student progress. The efficiency problem was related to three issues: (1) unclear, unrealistic expectations about the process, milestones, and time frame required to complete a Ph.D.; (2) fragmentation of program phases so that

coursework, research development , and dissertation research were isolated, disconnected activities; and (3) lack of supports for part-time adult graduate students . To address these problems the faculty initiated a series of initiatives to make the Adult and Vocational Education program more efficient by (1) maximizing the time students spent "on task," (2) increasing the supports provided, and (3) minimizing the costs to students. Toward this end, the faculty set three specific goals for improving the efficiency of the Adult and Vocational Education (A&VE) Ph.D. program, while also preserving the program's academic quality:

1. Reduce the time to declare a research topic from 3 years to 1 year;
2. Reduce the time to have research proposal accepted by the Graduate School from 5 plus years to 2.5 years; and
3. Reduce the time to earn a degree from 7 plus years to 5 years or less.

The effectiveness of the initiatives designed to achieve these three goals are reported in this paper.

Initiatives to Achieve Efficiency

The A&VE faculty set up three specific initiatives to accelerate students' completion of specific program milestones: (1) Clarify faculty expectations and correct student expectations about the process, milestones, and time frame required to complete a Ph.D. degree; and (2) Integrate the coursework, research development, and dissertation research phases of the program; and (3) Improve and increase the supports provided to help students maximize "time on task" and minimize the costs they incurred as they completed their degree programs. These initiatives were phased into the A&VE program beginning with the '93-'94 academic year.

Initiative 1: Clarify and correct expectations

Prior to 1993, expectations regarding the timeline for degree completion were never made explicit to students. As a result students did not have realistic expectations about the time required to complete each phase of the program. A typical student expectation was: "I'll finish my courses in 2 - 3 years, spend a month writing a proposal, work on my research over the following summer, then defend in the fall."

Following the research of Locke and Latham (1990) on improving the productivity and efficiency of performance by establishing clear goals and providing explicit feedback on progress toward those goals, several interventions were designed and implemented to clarify expectations and promote goal management. Orientation programs were held each year to clarify the milestones and time to degree for entering doctoral students. The schedule of milestones presented during the orientation sessions was discussed frequently and reinforced continually within the structure of the core courses, research seminars, and monthly program meetings. Students were encouraged to set targets for each academic year and data were collected annually to help faculty and students track their progress on the milestones. In addition, written materials such as milestone descriptions, specific process descriptions, and goal setting worksheets were developed and distributed.

Initiative 2: Integrate of program phases

The A&VE program, prior to improvement, consisted of three distinct phases . During the first phase learners completed a set of courses. The task, in the second phase, was to write a proposal. Completing the third phase involved writing and defending a dissertation research study. Very little overlap existed among the three stages. The lack of connections among the three phases contributed to the inefficiency of the program prior to the initiatives described in this case study.

Following again the research of Locke and Latham (1990) on improving efficiency and performance, the support to increase the efficiency of the program involved linking all program activities with specific tasks required to complete the degree program. To accomplish this end all course assignments (e.g., research papers) and program requirements (e.g., qualifying papers) were designed so that students completing each requirement advanced one more step closer to completing their dissertation research. The integration of program phases required a continuous improvement focus and involved the development and implementation of several coordinated efforts. Three examples of such improvements follow.

First, in the "old" program, students in the first core course wrote a traditional 10-15 page research paper on a topic related to adult and experiential learning. This paper usually found its way into a file drawer, never to be used again. In the "new" program, students in this same course synthesized and integrated the information covered in the course into their own "comprehensive model of adult learning." As students completed subsequent core courses, they continued to work on this theoretical model using the information from the course to expand and refine the model. When students moved to the research development phase of the program, they used their theoretical models as starting points for research proposals. In turn, the theoretical models used in their proposals were

fleshed out to become the theoretical frameworks and research literature discussed and reviewed in Chapter 1 and Chapter 2 of their dissertations.

Second, instead of being taught in isolation, research design skills were integrated into core courses and research seminars in which students developed their research proposals. Within two of the core courses students worked in research groups to gather data using interviews. These research groups then analyzed the data to answer research questions. This preliminary research experience was complemented by participation, during the mid-phase of their program, in a series of research seminars. During the seminar sessions research design concepts were presented and discussed using the concrete problems and issues students faced in designing their own research proposals. Discussions of sampling error, for example, were not conducted as dialogues about a set of abstract concepts. Rather, they were discussed with specific references to the sampling problems with which particular students in the research seminar were grappling. Students' research skills were assessed in terms of how well they applied research principles to their own research projects. Assessments were not carried out in terms of multiple choice answers on abstract examinations.

Finally, comprehensive examinations were redesigned to a qualifying paper format. The qualifying paper assignment required learners to write a critical review of the literature in their research area. Qualifying paper reviewers provided extensive feedback on students' analytical, writing, and synthesis skills to shape their understanding of performance expectations for dissertation writing. Qualifying papers later served as the foundation for Chapter 2 literature reviews, both in content and format.

Initiative 3: Provide necessary supports

McClure (1981) described the ideal learning conditions within a college program as including a "community of scholars." Related research suggests that the factors associated

with academic success include accessibility and quality of interactions with faculty (Tinto, 1987) and opportunities for friendship, support, social integration, and peer interaction that promote a sense of belonging and common purpose (Schlossberg, Lynch, & Chickering, 1989). In academic settings adults enjoy forming meaningful personal and professional relationships (Darkenwald, 1989). This affiliation has been found to be a strong motivator of adult learning, particularly for females (Beder & Darkenwald, 1989). As discussed earlier, Locke and Latham (1990) identified the necessity of goal management to successful goal accomplishment. In addition, Cross (1981) proposed that adult leaners' participation and persistence in the pursuit of educational goals can be sidetracked by institutional barriers, dispositional barriers, and situational barriers. The faculty, graduate assistants, and program students worked together to identify and design innovations that would provide the emotional support, goal management support, and technical support that learners needed while helping them to overcome barriers to persistence.

Research teams. The A&VE program was redesigned to allow students to work through each phase of the program as a member of a research team because, during concentrated periods of time together, students develop a sense of belonging and an appreciation of the capabilities of different group members (Kathrein, 1981). The research teams were also valuable opportunities for these commuting, part-time students to create viable networks with other researchers. The research teams were composed of students who were interested in common research questions (e.g., "How does reflection improve the development of proficiency?", "What organizational practices lead to effective transfer of training?"). Each team's first task was to develop and maintain an extensive bibliography of readings. The students, through their collaborative effort, quickly assembled the core of classic studies in each research area. The team's subsequent forays into the research literature identified articles that expanded the foundations established by the classic studies. The end result was a much more efficient literature review than any one student could have accomplished alone.

Each research team met on a monthly basis to explore possible research designs, review data gathering instruments, critique a team member's research proposal, discuss a particular problem raised by a new research study, explore approaches to data analysis, or discuss a team member's research results. Faculty members also participated regularly in research team discussions and contributed as collaborating researchers who possessed a knowledgeable perspective on research or who had developed expertise in a specific topic area. When new student explorers entered the program, they readily obtained advice and counsel from veterans on their research teams.

Task teams. Teams were also formed around completing specific tasks toward degree completion. For example, the proposal team was made up of students who were writing their research proposals, the data analysis team consisted of students who were analyzing data, and the 460 seminar included students who were in the final stages of writing and presenting their dissertation research. These temporary teams made the journey to degree completion more efficient because the teams used fully the skills and expertise of all individuals within the program and collectively directed their efforts to the completion of program requirements. Within the task teams students, who formerly waited for consultation with faculty advisors, now took on and solved many problems (e.g., "What other ways could I analyze this data?"). Faculty found the task teams to be efficient because they were able to advise several students about common tasks rather than conducting individual meetings on the same topic.

Other innovations. Several other innovations were designed and implemented to provide support and reduce barriers. Monthly program meetings were held to encourage shared learning across the entire student group, from newcomers to recent graduates. A "listserv" discussion that included all students in the program, faculty, and program graduates provided avenues for students to ask questions, share ideas, resolve problems,

and challenge each others' thinking. An annual end-of-the-year gathering was instituted and always included recognition of those who had reached program milestones.

Methods

To assess the effectiveness of the initiatives to improve the efficiency of the A&VE graduate program, surveys of graduate students were conducted every year from 1994 to 1998. In 1994 (n =180) and 1997 (n =122), graduate students in the A&VE program and graduate students in other programs within the Department of Educational Leadership (EDLR) were sampled. In 1995 (n = 37), 1996 (n = 35), and 1998 (n = 23), data were collected from A&VE students only. The 51% response rate (n = 180) in 1994 was sufficient to provide a wide range of opinions for initial analyses and to establish a baseline with which to compare results in future years (Krejcie & Morgan, 1970). Many individuals added supplemental written comments to their responses that provided anecdotal perspectives on their graduate experiences.

Survey Instrument

From a search of the research literature pertaining to the problems and issues encountered by adult learners in collegiate programs, a survey instrument was developed. The questionnaire included 60 items that in total assessed each respondent's support needs, barriers experienced, level and type of support received within their graduate programs, and the rate of progress in achieving academic goals. Within the questionnaire, support was defined as either emotional support (i.e., sense of belonging and encouragement to continue), goal management support (i.e. establishing goals, clarifying expectations, and receiving feedback on progress), or technical support (i.e. specific instruction and advice on accomplishing specific steps in the graduate degree process). Following Cross (1981), barriers were categorized as institutional (i.e. difficulty with university systems and rules), dispositional (i.e. personal characteristics and feelings), or situational (i.e. conflicts and competing demands experienced as a result of life circumstances). The internal reliability

of the sub-scales, analyzed in 1994 and 1997, were: emotional support .84 - .79; goal management support, .92 - .83; technical support, .95 - .79; institutional barriers, .76 -.81 ; dispositional barriers, .55 - .77; and situational barriers, .79.

Results

The responses from the 1994 and 1997 surveys were sorted into two groups for analysis. Group 1, the non-intervention group, included EDLR students who were in a degree program other than A&VE. Group 2, the intervention group, consisted of A&VE students who had participated in the revised program activities. At the time of their acceptance into a degree program, the academic capabilities of students in the two groups were similar. Specifically, the prior grade point average for Group 1 was 3.27 versus 3.31 for the A&VE group. The combined totals of the verbal, quantitative, and analytical scores of the Graduate Record Exams (GRE) were similar (Group 1 = 1733, Group 2 = 1774). In 1995, 1996, and 1998, responses from students in the A&VE program were examined to track trends and surface issues and ideas for further program innovations.

Student Profile

The respondents were all graduate students enrolled in the Department of Educational Leadership. The plurality (83%) were enrolled on a part-time basis. Overall the average age for the respondents was 42 years, (range 23 to 64 years). Among the respondents, females (66%) outnumbered males (34%) by a 2 to 1 margin. Students reported that they spent an average of 25% of their time on school work while devoting 40% of their time to their employment and 30% to home and family responsibilities.

Student Progress

Student progress data were recorded and analyzed for two groups: Group 1 was made up of students who entered the A&VE program prior to the 1993 program redesign, Group 2 consisted of students who have entered the program since 1993. The data concerning time to proposal and time to degree are presented in Table 2.

Table 2: Time to Proposal and Time to Degree for Pre-1993 (Non-intervention) and Post-1993 (Intervention) groups

	Mean time to proposal	Range	Mean time to degree	Range
Students accepted prior to 1993	5.3 years (64 months) n = 26	20 – 104 months	7.8 years (94 months) n = 31	43 – 172 months
Students accepted post-1993	2.7 years (33 months) n =11	27 – 52 months	5.2 years (62 months) n = 3	58 – 68 months

The data show that the mean time to proposal has been reduced from 5.3 years for the non-intervention group to 2.7 years for the intervention group. While the number of students in the intervention group to defend a dissertation is quite small (n=3), the data indicate that the goal to reduce time to degree is on track. The non-intervention group took an average of 7.8 years from date of first course to complete their Ph.D. degree; the intervention group's current average is 5.2 years.

To assess the reduction of time it takes to settle on a research topic, an analysis of survey data was conducted with a sample of students who had been enrolled in a degree program for four semesters or less. In 1994, a group of A&VE students (n=23) were compared with a group of EDLR students (n = 40); both groups had been enrolled for four semesters or less. The analyses indicated that the students in the A&VE intervention group tended to be more advanced than their EDLR counterparts. For example, students in the A&VE intervention group indicated solid agreement (m = 3.4) with the statement: "I know what my dissertation topic is." Students in other EDLR programs responded with less agreement (m = 2.7) on this same question ($F = 5.5$, $p < .05$). The 1997 analysis indicated students in the A&VE intervention group indicated solid agreement (m = 3.3) with the

statement: "I know what my dissertation topic is.", while students in other EDLR programs responded with less agreement (m = 2.9) on this same question. The 1997 differences were not statistically significant.

Follow-up analyses were conducted to seek explanations for why students in the A&VE program might be advancing more rapidly in their progress toward a degree. A&VE students indicated that a greater degree of integration existed between coursework activities and dissertation requirements than students in other EDLR programs. In the 1994 survey, the A&VE intervention group indicated that their professors stressed the relationship between coursework and completion of degree requirements to a greater extent (m = 3.5) than the non-intervention group (m = 1.7) ($F = 30.4$, $p < .0001$). Similarly, students in the intervention group reported that professors related course materials to students' own dissertation research to a greater extent (m = 3.4) than students in other EDLR programs (m = 2.1) ($F = 42.4$, $p < .0001$). The effect size of the differences between the group means on these two questions, .46 and .65 respectively, is medium to large (Cohen, 1992). The 1997 data showed similar differences with the A&VE group (n = 5) indicating that their professors stressed the relationship between coursework and completion of degree requirements to a great extent (m = 4.0) as compared to a small extent (m = 1.4) reported by the EDLR group (n = 18; $F = 20.5$, $p < .0001$). Professors in the A&VE program related course materials to students' own dissertation research to a great extent (m = 3.8) according to respondents, while EDLR students responded that their professors made the same connections to some extent (m = 1.8; $F = 9.5$, $p < .001$).

Student Supports

For the entire sample across five years of data, the results indicated that a discrepancy existed between the supports students needed and the assistance provided by graduate programs within the Department of Educational Leadership. For example, on a scale from *1 = small extent* to *4 = great extent* students indicated a relatively high level of

need (m = 3.4) for technical support (e.g., help with a statistical analysis), but reported that the graduate programs provided a much lower level of support (m = 2.1). Similarly students experienced institutional barriers (e.g., difficulties with registering for courses) to a large extent (m = 2.5) but the graduate programs within the Department provided only a small degree of assistance (m = 1.8) to help students deal with these institutional barriers.

Table 3 indicates that statistically significant differences existed between the level of support perceived by students within the A&VE intervention group versus the support perceived by their counterparts in other EDLR degree programs. In 1994 the A&VE students report higher levels of emotional support ($m_{A\&VE} = 2.8$ vs $m_{Dept.} = 1.8$; $F = 17.9$, $p < .001$), goal management support ($m_{A\&VE} = 2.3$ vs $m_{Dept.} = 1.6$; $F = 12.0$, $p < .001$), and technical support ($m_{A\&VE} = 2.3$ vs $m_{Dept.} = 1.8$; $F = 4.9$, $p < .05$). A similar difference is apparent in the extent to which the programs helped students to overcome barriers. Students in the A&VE program reported receiving more help in overcoming institutional barriers ($m_{A\&VE} = 2.2$ vs $m_{Dept.} = 1.2$; $F = 18.3$, $p < .001$) and dispositional barriers ($m_{A\&VE} = 2.2$ vs $m_{Dept.} = 1.2$; $F = 15.9$, $p > .001$) than did students in other EDLR programs. There was no significant difference in the extent to which the programs helped students overcome situational barriers. Group membership explained between 10% to 15% of the variance between the two groups, a small to medium effect size (Cohen, 1992).

As shown in Table 3, the five-year means for support provided are not noticeably different than those in 1994. The 1997 comparative survey did, however, reveal that students in the A&VE program reported significantly more support needs and experienced signficantly more barriers than did their EDLR counterparts. In addition, five-year comparisons show that A&VE students reported experiencing institutional barriers to a lesser extent each year the survey was conducted (1994 m = 2.7, 1997 m = 1.4). The significance of these findings will be addressed in the discussion section.

Table 3: Extent to Which Graduate Students Perceived That Programs Provide Support in 1994 and Across Surveys

	Extent to which DEPT. programs provided support 1994 (n = 115)	Extent to which A&VE programs provided support 1994 (n = 40)	Extent to which DEPT. programs provided support 1994/1997	Extent to which A&VE programs provided support 1994-1998
Emotional support	1.8	2.8***	1.9	2.6
Goal management support	1.6	2.3***	1.6	2.4
Technical support	1.8	2.3*	1.6	2.4
	Extent to which DEPT. programs helped students overcome barriers 1994 (n = 115)	Extent to which A&VE program helped students overcome barriers 1994 (n = 40)	Extent to which DEPT. programs helped students overcome barriers 1994/1997	Extent to which A&VE program helped students overcome barriers 1994 - 1997
Institutional barriers	1.2	2.2***	1.3	2.2
Dispositional barriers	1.2	2.2***	1.5	2.2
Situations barriers	1.3	1.1	1.3	1.9

*** $p < .001$; ** $p < .01$; * $p < .05$

Note: Scale: 1 = to a small extent, 2 = some extent, 3 = moderate extent, 4 = to a great extent

Discussion

The results of the study demonstrate that interventions to (1) clarify the process, milestones, and time frame required to complete a Ph.D. degree, (2) integrate the coursework, research development, and dissertation research phases of doctoral study, and (3) improve and increase the supports provided to help students maximize "time on task" can result in substantial reductions in time to degree for part-time adult graduate students.

A closer look at the data revealed that the programmatic innovations had the most impact on reducing the time it took doctoral students to decide on a research topic and to have a research proposal approved. Both the intervention and non-intervention groups took an average of 30 months from the time of their proposal acceptance to conduct their research and write their dissertations.

The decrease in time-to-proposal is directly related to the clarification of expectations early on, the integration of the coursework and research design phases of the doctoral program, and the availability of emotional support, goal management support, and technical support necessary to promote speedy progress. Students entered the program with the expectation that they would produce an acceptable research proposal within 2 to 3 years. Students developed research concepts and skills earlier and were able to apply them to their own research development at an earlier stage than their pre-intervention counterparts. Finally, students were able to readily access information and support through research teams, task teams, program meetings, and email exchanges that helped them complete major program milestones.

Of note is the increase in perceived need for support and increased experience of barriers reported by the intervention group in later years of the survey. An increased demand on students in the form of challenging goals, while promoting rapid progress, may also increase the needs of students. Program faculty who want to decrease time to degree must also be prepared to increase the supports to students.

Certain features of this case study offer promising options to other educators who are striving to improve the effectiveness and efficiency of graduate or undergraduate programs Overall this case outlines a deceptively simple formula for improving the efficiency of graduate programs.

1. *Define explicitly the core tasks required for completion of the degree program.* In this case those tasks were: (a) learn core content; (b)develop research skills; (c) pass a general examination; and (d) defend successfully a dissertation research study.

2. *Propose a timeline with explicit milestones for degree completion.* The timeline that was most appropriate for the students in this case, who were taking 3 - 6 credits per semester, was 1 year to definition of a general research topic, 2.5 years to completion of a research proposal, and 5 years to completion of all degree requirements.

3. *Assist students in managing their academic goals.* Specify the many steps to the graduate degree and clarify expectations and criteria for each goal. Promote realism about effort and time frames. Provide regular feedback on progress toward goals and promote dialogue among students on successful strategies for reaching goals efficiently.

4. *Provide task specific supports to help students overcome the obstacles and barriers to degree completion.* In this case the supports included the formation of research teams, the initiation of informational orientation sessions, and the implementation of hands-on research seminars in which students developed specific research skills. In addition, provide technical assistance to help students overcome specific problems that are impeding progress toward completion of degree requirements. Remove barriers for adult learners by making it easier for them to get information, forms, handbooks, and answers to their questions. Develop explicit, written materials, and a library of resources that will assist them.

5. *Target support to the specific needs of students.* Tailor the support to match the specific tasks students need to accomplish at each progressive stage in their program of study.

6. *Maximize time on tasks related directly to completion of degree requirements.* In this case students began work on their dissertation in their very first course by completing a class-based research project and by using the results to propose a theoretical model. Work on this proposed model continued through subsequent core courses and evolved

into the basis for a qualifying paper, a research proposal, and a conceptual framework for a dissertation research project. By imbedding the development of theoretical frameworks and the research skills into each course students maximized the time they spent on tasks directly related to the completion of degree requirements.

7. *Use fully the resources, skills, and expertise each student brings to the program.* Expand the availability and use of student's expertise by establishing student networks. Offer more advanced students the opportunities to develop their research skills and talents by assisting newer students.

8. *Develop a feedback process designed to continuously improve and refine the efficiency of the program.* Regularly ask for input from students on how to make the program better. Use student feedback to initiate a "continuous improvement" cycle for the program.

We characterize the five components as *deceptive* because they are easier to list and easier to talk about than they are to implement. In this regard we offer a final word of caution. *No one set of generic interventions exists that will guarantee the efficiency of all graduate degree programs.* Efficiency, in our experience, can be attained if a program's structure, activities, services, and supports are continually adjusted in response to feedback from the learners who are participating in the program. Our advice is: *Trust the learners.* Information about the refinements in the program that are required to improve its efficiency will be available in the verbal requests, complaints, and wishes that students articulate if and when they are engaged as partners in a dialogue to continuously improve the educational context in which they learn.

References

Baird, L. (1990). The melancholy of anatomy: The personal and professional development of graduate and professional school students. In J. C. Smart (Ed.), Higher Education Handbook of Theory and Research, Vol. IV. New York: Agathon Press, 361-392.

Baldwin, R. G. & Thelin, J. R. (1990). Thanks for the memories: The fusion of quantitative and qualitative research on college students and the college experience. In J. C. Smart (Ed.), Higher Education Handbook of Theory and Research, Vol. IV. New York: Agathon Press,, 337-360.

Beder, H., & Darkenwald, G. G. (1989). Gender differences in adult student perceptions of college classroom social environments. Adult Education Quarterly, 40(1), 33-42.

Bowen , W. G. & Rudenstein, N. L. , Eds. (1992). In pursuit of the Ph.D. Princeton, N.J.: Princeton University Press.

Brazziel, W. F. (1992). Older students and doctorate production. The Review of Higher Education, 15(4), 449-462.

Cohen, J. (1992) A power primer. Psychological Bulletin, 112(1), 155-159.

Cross, K. P. (1981). Adults as Learners: Increasing Participation and Facilitating Learning. San Francisco: Jossey-Bass Publishers.

Darkenwald, G. G. (1989). Enhancing the adult classroom environment. In E. Hayes (Ed.) Effective Teaching Styles, New Directions for Continuing Education, 43, San Francisco: Jossey-Bass.

Foote, M. (1988). Persisters and non-persisters' perceptions of institutional integration at the doctoral level. Unpublished doctoral dissertation, University of Connecticut, Storrs.

Kathrein, M. A. (1981). A study of self-directed continuing professional learning members of the Illinois nurses' association: Content and process. Doctoral Dissertation. Northern Illinois University.

Krejcie, R. V. & Morgan, D. W. (1970). Determining sample size for research activities. Educational and Psychological Measurement, 30, 607-610.

Locke, E. A. &, Latham, G. P. (1990). Work motivation and satisfaction: Light at the end of the tunnel. Psychological Science, 1(4), 240-246.

McClure, G. (1981). Learning conditions at the Ph.D. level at the Ohio State University. Dissertation Abstracts International, 42, 4324.

Schlossberg, N. K., Lynch, A. Q., & Chickering, A. W. (1989). Improving Higher Education Environments for Adults. San Francisco: Jossey-Bass Publishers.

Tinto, V. (1987). Leaving College: Rethinking the Causes and Cures of Student Attrition. Chicago: The University of Chicago Press.